

**IN THE CLAIMS:**

Claims 1 – 29 (Canceled)

30. (Currently amended) ~~The implantable amplifying circuit of claim 29, wherein the preamplifier includes~~ An implantable amplifying circuit for recording electrical signals generated by a nerve and detected by a pair of electrode wires in contact with the nerve, the amplifying circuit comprising:

a preamplifier having a pair of inputs for receiving signals from the pair of electrode wires, the preamplifier including a differential pair of input MOSFET transistors having a low input current that serves as a first protection circuit to limit current flow through the nerve and the electrode wires, a pair of bipolar transistors and a current mirror that are driven with differential outputs of the MOSFET input transistors and producing a single-ended nerve output signal;

a common signal line adapted to connect a body ground of a patient to a common voltage of the amplifying circuit;

a second protection circuit disposed in series with the common signal line including a parallel resistor/capacitor combination to limit current flow through the nerve and the common signal line.

31. (Currently amended) The implantable amplifying circuit of claim ~~[[29]]~~ 30, wherein said second protection circuit comprises a resistor in parallel with a series of one or more capacitors.

32. (Currently amended) The implantable amplifying circuit of claim ~~[[29]]~~ 30, further comprising:

at least one amplifier stage connected to ~~an output at the preamplifier~~ single-ended nerve output signal that produces an amplified nerve output signal.

33. (Currently amended) ~~The implantable amplifying circuit of claim 32, further comprising~~ An implantable amplifying circuit for recording electrical signals generated by a nerve and detected by a pair of electrode wires in contact with the nerve, the amplifying circuit comprising:

a preamplifier having a pair of inputs for receiving signals from the pair of electrode wires, the preamplifier including a differential pair of input MOSFET transistors having a low input current that serves as a first protection circuit to limit current flow through the nerve and the electrode wires;

a common signal line adapted to connect a body ground of a patient to a common voltage of the amplifying circuit;

a second protection circuit disposed in series with the common signal line including a parallel resistor/capacitor combination to limit current flow through the nerve and the common signal line;

at least one amplifier stage connected to an output at the preamplifier that produces an amplified nerve output signal;

a DC restoration circuit having an input connected to an output of said amplifier stage.

34. (Currently amended) ~~The implantable amplifying circuit of claim 32, wherein~~ An implantable amplifying circuit for recording electrical signals generated by a nerve and detected by a pair of electrode wires in contact with the nerve, the amplifying circuit comprising:

a preamplifier having a pair of inputs for receiving signals from the pair of electrode wires, the preamplifier including a differential pair of input MOSFET transistors having a low input current that serves as a first protection circuit to limit current flow through the nerve and the electrode wires;

a common signal line adapted to connect a body ground of a patient to a common voltage of the amplifying circuit;

a second protection circuit disposed in series with the common signal line including a parallel resistor/capacitor combination to limit current flow through the nerve and the common signal line;

at least one ~~said amplifier stage is a~~ band-pass amplifier connected to an output at the preamplifier that produces an amplified nerve output signal.

35. (Previously presented) The implantable amplifying circuit of claim 34, wherein said band-pass amplifier comprises a plurality of high-pass filters and a plurality of low-pass negative-feedback amplifiers alternately cascaded with said high-pass filters.

36. (Previously presented) The implantable amplifying circuit of claim 34, wherein said band-pass amplifier is a programmable-gain band-pass amplifier.

37. (Previously presented) The implantable amplifying circuit of claim 35, wherein each low-pass negative-feedback amplifier comprises:

a plurality of series-connected resistors forming a resistor string connected between an output terminal and a voltage reference terminal of the low-pass negative-feedback amplifier; and

a plurality of selectable switches wherein an end of each selectable switch is connected to an input terminal of the low-pass negative-feedback amplifier and another end of each selectable switch is connected to a nodal point between the resistors in the resistor string.

38. (Previously presented) The implantable amplifying circuit of claim 35, wherein each low-pass negative-feedback amplifier comprises an output stage in a Darlington configuration operating as a class AB amplifier wherein a bias circuit supplying bias to the output stage also carries signal current.

39. (Previously presented) The implantable amplifying circuit of claim 36, wherein said programmable-gain band-pass amplifier has a frequency range between approximately 900 Hz and 9 kHz for  $5\text{ }\mu\text{V}_{\text{peak}}$  input neural signals.

40. (Currently amended) The implantable amplifying circuit of claim ~~[[29]]~~ 30, wherein the implantable amplifying circuit has an equivalent input noise at 3 kHz that is lower than  $0.6\text{ }\mu\text{V}_{\text{rms}}$ .

41. (Currently amended) The implantable amplifying circuit of claim ~~[[29]]~~ 30, wherein the implantable amplifying circuit has a CMRR higher than 90 dB at 250 Hz.

42. (Currently amended) The implantable amplifying circuit of claim ~~[[29]]~~ 30, wherein the implantable amplifying circuit has a power consumption lower than 12 mW.

43. (Currently amended) The implantable amplifying circuit of claim ~~[[29]]~~ 30, wherein the preamplifier has an input DC current that is lower than 1 nanoamp.

44. (Currently amended) The implantable amplifying circuit of claim ~~[[29]]~~ 30, wherein said implantable amplifying circuit is powered by an RF telemetry link.

45. (Currently amended) The implantable amplifying circuit of claim ~~[[29]]~~ 30, wherein the implantable amplifying circuit has a PSRR higher than 85 dB at 3 kHz.

46. (Currently amended) The implantable amplifying circuit of claim ~~[[29]]~~ 30, wherein said implantable amplifying circuit is powered by a battery.